

# IOWA HIGHWAY RESEARCH BOARD

*Minutes of April 23, 2004*

## **Regular Board Members Present**

J. Adam	C. Marker
L. Brehm	M. Nahra
R. Ettema	G. Parker
T. Fonkert	C. Schloz
R. Gould	J. Selmer
J. Ites	C. Van Buskirk
J. Krist	

## **Alternate Board Members Present**

A. Abu-Hawash for L. Jesse	J. Berger
S. Andrie for L. Greimann	G. Miller

## **Board Members With No Representation**

None

## **Secretary**

M. Dunn

## **Visitors**

Gordon Smith	<i>Iowa Concrete Paving Association</i>
Bruce Brakke	<i>Iowa Department of Transportation</i>
Sara Buseman	<i>Iowa Department of Transportation</i>
Ed Engle	<i>Iowa Department of Transportation</i>
Mike Heitzman	<i>Iowa Department of Transportation</i>
Sandra Larson	<i>Iowa Department of Transportation</i>
Charlie Purcell	<i>Iowa Department of Transportation</i>
Tom Reis	<i>Iowa Department of Transportation</i>
Will Stein	<i>Iowa Department of Transportation</i>
Tom Welch	<i>Iowa Department of Transportation</i>
David Little	<i>Iowa Department of Transportation - District 2</i>
Travis Hosteng	<i>Iowa State University</i>
Brent Phares	<i>Iowa State University</i>
Radhey Sharma	<i>Iowa State University</i>
Muhannad Suleiman	<i>Iowa State University</i>
F. Wayne Klaiber	<i>Iowa State University/CCEE Department</i>
Shauna Hallmark	<i>Iowa State University/CTRE</i>
Dale Harrington	<i>Iowa State University/CTRE</i>
Neal Hawkins	<i>Iowa State University/CTRE</i>
Tom Maze	<i>Iowa State University/CTRE</i>

**The meeting was held in the East/West Materials Conference Room at the Iowa Department of Transportation, Ames, Iowa. The meeting was called to order at 9:00 A.M. by Greg Parker.**

#### **Agenda review/modification**

- No additions or modifications.

#### **Approval of the minutes**

- Mark Nahra moved to approve the minutes from the February 27, 2004 meeting with no additions or corrections. Charles Marker seconded. Carried with 13 yes, 0 no, and 0 abstaining.

#### **Final Report for TR-428, “Effective Structural Concrete Repair, Volumes 1, 2 and 3”**

- Dr. F. Wayne Klaiber presented the overall project objective, the role of the advisory group, and the development of scope for the three volume final report.
    - *Repair of Impact Damaged Prestressed Concrete Beams with CFRP - Volume 1* - The problem statement; objective; scope; laboratory and field-test information with diagrams, photos and graphs of the beams tested; recommendations and conclusions were reviewed for Volume 1.
    - *Use of FRP to Prevent Chloride Penetration in Bridge Columns - Volume 2* - The problem statement; objective; overview of the laboratory and field scope; TRB information on result of salt usage; laboratory test photo and specifics; field test site selection information, map and details; data acquisition and evaluation information; and results-to-date were presented for Volume 2.
    - *Evaluation of Repair Materials for Use in Patching Damaged Concrete - Volume 3* - The problem statement, objective, scope, flexural test and summary of results, average wedge failure loads before and after freeze/thaw cycles graph, general recommendations, and recommendations for a successful concrete repair process were summarized for Volume 3.
- The following additional useful information contained in the three volumes of TR-428 was mentioned: Volume 1 - Design/Application Guide; Volume 2 - Procedures for Installing a FRP Wrap on a Reinforced Column; and Volume 3 - Algorithm for Comparing Different Prospective Repair Materials. General report comments completed the presentation. The project concludes in 2008. Data will continue to be collected for the repair methods described in Volumes 1 and 2 and brief summary reports with additional pertinent results and conclusions will be submitted at the end of the project.
- The reports were complimented on being informative and well written.
  - Charles Marker moved to approve the three volume final report. Rob Ettema seconded. Carried with 14 yes, 0 no, and 0 abstaining.

#### **Presentation on the Innovative Bridge Research and Construction (IBRC) Program**

- Dr. Brent Phares, Iowa State University, gave an informative presentation to explain what the Federal Highway Administration’s IBRC Program is, what it promotes, the requirements of the bridge owner to be in the program, and the number of IBRC projects in Iowa since 1998.
- The following projects and innovative materials/concepts, tested in Iowa through the IBRC Program, were mentioned: post-tensioned FRP rods (innovative material: CFRP rods) (bridge

owner - Iowa DOT); CFRP plate strengthening (innovative material: CFRP plates) (bridge owner - Iowa DOT); MMFX reinforcing steel (innovative material: MMFX, a propriety steel with high corrosion resistance) (bridge owner - Iowa DOT); high performance steel (innovative material: HPS) (bridge owner - Iowa DOT); FRP deck panels (innovative material: GFRP deck panels) (bridge owner - City of Bettendorf); steel free deck (innovative concept: no deck steel) (bridge owner - Tama County - first in the U.S.); FRP reinforced glued-laminate timber girders (innovative material: FRP on timber) (bridge owner - Delaware County); temporary FRP detour bridge (innovative material: GFRP) (bridge owner - Iowa DOT); and ultra high performance concrete (innovative material: UHPC) (bridge owner - Wapello County - first in the U.S.).

- An overview of the future of the program ended the presentation.

### **Proposal, “Guidelines for Safety Treatment of Roadside Culverts”**

- This topic was submitted in the brainstorming process and there was some interest shown for it in the preliminary ballot. This proposal is brought to the Board because it is related to a current NCHRP study and can be done under this proposal with approximately a 50% cost savings.
- After discussion, Lyle Brehm moved to proceed with hearing the proposal and pulling the topic out of the prioritization process if approved. Mark Nahra seconded. Carried with 15 yes, 0 no, and 0 abstaining.
- David Little, Iowa DOT Assistant District Engineer in District 2, presented information on the cross-drainage structures; culvert treatment options; culvert extensions; safety analysis; scope of the proposed study; literature review; roadway and culvert geometry; alternatives and cost; benefit/cost ratio; accident prediction method; AASHTO encroachment model; benefit/cost analysis; sample guidelines; and proposal details including budget and cost savings due to being part of the NCHRP study, time frame and principal investigators for the project.
- It was mentioned that there are no other states joining with the project and Will Stein, Iowa DOT Methods Section - Office of Design, will act as project manager and provide the numbers/information for the study as needed, so the study will remain Iowa specific.
- John Adam moved to approve the proposal with the funding split of 45% Primary, 45% Secondary and 10% Street. John Selmer seconded. Carried with 14 yes, 0 no, and 1 abstaining.
- The topic was pulled from the prioritization process.

### **Final voting for the prioritization of research topics for FY 04-05**

- There was time allowed time to solicit support for any topic of special interest prior to voting.
  - Bruce Brakke, Iowa DOT Office of Bridges and Structures, reviewed initial topic submitted, which consisted of a literature search and a nationwide survey on performance of high mast lighting towers. Since the submittal of that topic, there has been a collapse of one by Sioux City, due to wind-induced vibrations. The Iowa DOT owns 233 of these lighting towers ranging from 100 - 180 feet tall. After the subsequent inspection of the towers, 20 others have been taken down. Robert Dexter, a consultant from Minnesota, was hired to investigate the cause, develop a retrofit procedure, and determine if the other towers needed retrofit or replacement. The consultant referred to a specification (not specific to high mast towers) that was developed in Canada for evaluation. With the uncertainty of the vortex shedding and

stresses on the towers, the scope of this topic now focuses on providing instruments and staff time needed to monitor a tower and evaluate the correction process to handle the issue. The cost is estimated to run approximately \$60,000.

- The initial ballot and list, with short description, of brainstormed and past topics of interest were e-mailed to members and alternates prior to the meeting. Ballot (one per regular member seat) results that were returned were compiled by Mark Dunn and results of the overall ranking were sent to members and alternates on the April Board packet CD. At the meeting, each regular member seat was allowed to vote on each topic he or she wanted to have included in the final priority list. Each seat was allowed a total of 20 votes, with no more than 5 votes going toward any one topic (voting done by show of fingers or by voice for number of votes as topic was read aloud). The results were recorded, sorted and handed out later in the meeting. The top 20 - 25 will be considered the final research topic priorities for FY 04-05. Mark Dunn, with the assistance of the author of the topic idea, will develop RFPs for the top few to be reviewed at the May and June meetings.

#### **Finalize location of 2004 IHRB traveling meeting**

- After reviewing the location options presented at the last meeting, it was decided by consensus of the Board, that there was interest in having the traveling meeting in Des Moines. Mark Dunn will look into coordinating a presentation and tour with the I-235 DOT office. Details will be sent with the May Board packet.

#### **New Business**

- Having the project percentages on the fund balance report was complimented. These numbers state the percentage of funding that goes towards IHRB approved priority projects, continuation of previously funded projects, and unsolicited projects for the fiscal year. The Business Plan outlines a goal for the various types of project funding and this provides a useful guide for the Board.

**Greg Parker adjourned the meeting.**

**Date of Next Meeting: THE NEXT MEETING WILL BE HELD FRIDAY, MAY 21, 2004 AT 9:00 A.M. IN THE OAK ROOM AT THE DES MOINES BOTANICAL CENTER, IN DES MOINES, IOWA.**

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Mark Dunn, IHRB Secretary